Technical Review and the Evaluation of the Application for Air Quality Significant Permit Revision Number 45670

I. INTRODUCTION

This Class II Significant Revision is being issued to Phelps Dodge Bagdad, Inc., the Permittee, for the addition of new equipment that will operate in conjunction with existing equipment to refine molybdenum concentrate (MoS_2) into molybdenum trioxide (MoO_3), which will also produce a rhenium solution by-product.

New equipment will include a steam deoiler to remove organics from the molybdenum concentrate, a filtration system for processing the molybdenum trioxide, and a solution extraction system for concentrating rhenium by-product. Conversion of the molybdenum concentrate into molybdenum trioxide will be conducted with the existing leaching system, which is also used for leaching the copper concentrate. The system will be designed to process an average molybdenum concentrate of 4 tons per hour.

Company Information

Facility Name:	Bagdad Mine
Mailing Address:	PO Box 245 Bagdad, AZ 86321 Yavapai County
Facility Address:	Terminus of Highway 96 Bagdad, AZ 86321 Yavapai County

II. FACILITY DESCRIPTION

A. Process Description

PDBI operates a copper ore mining and processing facility. The major processes at the Bagdad mine include:

1. Open pit mining and hauling of oxides and sulfide ore, low-grade ore and overburden;
2. Crushing and conveying of mined sulfide ore to the mill/concentrator area;
3. Milling and concentrating of sulfide ore to produce copper and Molybdenum (moly) concentrate;
4. Leaching of oxide ore and low-grade sulfide ore to produce pregnant leach solution (PLS);
5. Pressure leaching of concentrate to produce additional PLS; and
6. Solution extraction (SX) of the PLS and electrowinning EW to produce high purity copper cathodes.

Secondary processes that have the potential to emit regulated pollutants include:

1. A portable aggregate system;
2. Lime storage and handling operations;

3. Vehicle traffic on unpaved roads; and
4. Sample preparation facilities.

B. Air Pollution Control Equipment

Scrubbers are installed on equipment to control particulate matter emissions. A flare is also used to control VOC emissions from the steam Deoiler and the wet scrubbers. Wet scrubbers are used as both air pollution controls and as process equipment.

III. LIMITATIONS ON POTENTIAL TO EMIT (PTE)

Due to the addition of new equipment, this facility has the PTE of more than 100 tons per year of VOCs, which would make the facility a major source by definition. However, the Permittee has taken limitations to stay below the major source thresholds.

IV. EMISSIONS

The uncontrolled emissions associated with new equipment permitted through this significant revision in tons per year are given below.

Pollutant	Emissions
CO	5.216
NOx	4.953
SOx	0.028
VOCs	110.24
PM	657.38
PM_{10}	657.37

The controlled emissions associated with new equipment permitted through this significant revision in tons per year are given below.

Pollutant	Emissions
CO	5.216
NOx	4.953
SOx	0.028
VOCs	6.22
PM	0.645
PM_{10}	0.632

The controlled emissions summary for the entire facility in tons per year is given below.

Pollutant	Emissions
CO	32.61
NOx	47.61
SOx	21.49
VOCs	52.64
PM	115.68
PM_{10}	95.04

V. COMPLIANCE HISTORY

There are currently no open enforcement actions against the facility.

VI. MONITORING, REPORTING, AND RECORDKEEPING REQUIREMENTS

A. Natural Gas Steam Generator Package and Natural Gas Heater

1. The Permittee must conduct monthly surveys of visible emissions from the stack of the natural gas steam generator package and natural gas heater. If any observation appears to exceed the opacity standard, then the Permittee must conduct and record a certified Method 9 observation. If this observation is in excess of the opacity standard, then suitable corrective action must be taken and the incident must be reported to the agency as an "excess emission".

2. The Permittee must maintain records of fuel supplier certifications. The certification must contain information regarding the name of fuel supplier and heating value of the fuel.

B. Settling Tank and Solution Extraction Process

The Permittee must maintain a record of all control measures used to limit emissions from the SX process.

C. Concentrate Feed Hopper, Screw Conveyors 1 & 2, Filter 2, and Molybdenum Hopper

1. The Permittee must perform monthly visual surveys. The Permittee is required to keep records of all surveys, observations, and results.

2. The Permittee must maintain records of the daily process rate and hours of operation of all material handling facilities.

D. Concentrate Belt Feeder, Steam Deoiler, Belt Filter, and Molybdenum Storage Bin

1. The Permittee must perform quarterly opacity observations from the concentrate belt feeder, steam deoiler, Molybdenum (MoO_3) Storage Bin and the flare in addition to monthly visual surveys. The Permittee is required to keep records of all surveys, observations, and results.

2. The Permittee must record on a weekly basis the change in pressure of the gas stream across each operating scrubber and the scrubbing liquid flow rate.

3. The Permittee must continuously monitor and record the flare chamber temperature.

VII. TESTING REQUIREMENTS

1. The Permittee must conduct EPA Reference Method 5 or 17 tests within 180 days of permit issuance and upon request by the Director on Wet Venturi and Wet Packed Scrubbers to ensure compliance with the PM emission standards.

2. Within 180 days of issuance of the permit, the Permittee must perform an initial performance test for VOC emissions to demonstrate compliance with the VOC emission limit specified in the permit. Subsequent performance test must be performed upon request by the Director.

VIII. TRIVIAL ACTIVITIES

This table includes an evaluation of whether the activity can be deemed as trivial pursuant to A.A.C. R18-2-101.

Type of Equipment	Capacity	Units	Insignificant Activities	Equipment ID Number	Justification
Repulp Tank 1	170	ft^3	Y	M-RP1	A.A.C R18-2-101 (119)(s)
Repulp Tank 2	170	ft^3	Y	M-RP2	A.A.C R18-2-101 (119)(s)

IX. LIST OF ABBREVIATIONS

A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
CO ..... Carbon Monoxide
EPA ..... Environmental Protection Agency
NO_x ..... Nitrogen Oxides
PM ..... Particulate Matter
PM_{10} ..... Particulate Matter Nominally less than 10 Micrometers
SO_x ..... Sulfur Oxides
TPY ..... Tons per Year
VOC ..... Volatile Organic Compound